

IN THE CLAIMS:

Please amend the claims as follows:

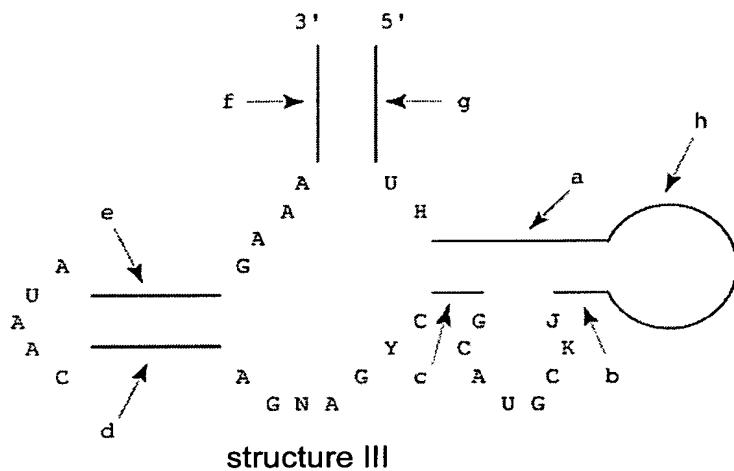
1. (Original) A non-natural cis-cleaving hammerhead ribozyme comprising a core, a stem I, a stem II, a stem III, a loop I, and a loop II, wherein loop I and loop II are derived from loop I and loop II of a first hammerhead ribozyme selected from cherry small circular RNA+ (Scc+), cherry small circular RNA- (Scc-), Lucerne transient streak virusoid+ (sLTSV+), Lucerne transient streak virusoid- (sLTSV-), Tobacco ringspot virus satellite RNA+ (sTRSV+), Arabis mosaic virus (sArMV), Chicory yellow mottle virus satellite RNA (sCYMV), Barley yellow dwarf virus satellite RNA- (sBYDV-), Barley yellow dwarf virus satellite RNA+ (sBYDV+), Peach latent mosaic virus RNA+ (PLMVd+), Peach latent mosaic virus RNA- (PLMVd-), Chrysanthemum chlorotic mottle viroid+ (CChMVd+), Chrysanthemum chlorotic mottle viroid- (CChMVd-), Subterraneum clover mottle virusoid (vSCMoV), and velvet tobacco mottle virusoid (vVTMoV), and wherein at least one of stem I, stem II, and stem III is derived from a second hammerhead ribozyme that is not the same as the first hammerhead ribozyme.

2. (Original) A non-natural cis-cleaving hammerhead ribozyme comprising a core, a stem I, a stem II, a stem III, a bulge within stem I, and a loop II, wherein loop II and the bulge within stem I are derived from loop II and a bulge within stem I of a first hammerhead ribozyme selected from *Notophthalmus viridescens* satellite RNA (newt), *Ambystoma talpoideum* (Am. ta.), *Amphiuma tridactylum* (Am. tr.), *Schistosoma mansoni* hammerhead ribozyme (Schistozyme), *D. baccetti* cricket

hammerhead ribozyme (cricketzyme A), *D. schiavazzii* cricket hammerhead ribozyme (cricketzyme B), and Avocado sunblotch viroid+ (ASBV+), and wherein at least one of stem II, stem III, and a portion of stem I is derived from a second hammerhead ribozyme that is not the same as the first hammerhead ribozyme.

3-4. (Cancelled)

5. (Original) A non-natural cis-cleaving hammerhead ribozyme comprising the structure III:



wherein:

J, K, and N are each independently selected from A, C, G, and U;

Y is selected from C and U;

H is selected from A, C, and U;

a is a sequence of 4-20 nucleotides, wherein each nucleotide is independently selected from A, C, G, and U;

b, c, d, e, f, and g are each a sequence of 2-20 nucleotides, wherein each nucleotide is independently selected from A, C, G, and U; h is a sequence of 1-20 nucleotides, wherein each nucleotide is independently selected from A, C, G, and U; a, b, JKCGUACG, and c together are stem I; d and e together are stem II; and f and g together are at least a portion of stem III.

6-8. (Cancelled)

9. (Currently Amended) The non-natural cis-cleaving hammerhead ribozyme of ~~any of claims 1-8~~ claim 1, wherein the ribozyme cis-cleaves at an initial rate of at least 0.5 min^{-1} in a buffer comprising 50 mM Tris (pH 7.0) and 1 mM Mg^{2+} at 37°C.

10. (Currently Amended) The non-natural cis-cleaving hammerhead ribozyme of ~~any of claims 1-8~~ claim 1, wherein the ribozyme cis-cleaves at an initial rate of at least 0.5 min^{-1} in a buffer comprising 50 mM Tris (pH 7.0) and 0.5 mM Mg^{2+} at 37°C.

11. (Currently Amended) The non-natural cis-cleaving hammerhead ribozyme of ~~any of claims 1-8~~ claim 1, wherein the ribozyme cis-cleaves at an initial

rate of at least 0.5 min⁻¹ in a buffer comprising 50 mM Tris (pH 7.0) and 0.1 mM Mg²⁺ at 37°C.

12. (Currently Amended) A polynucleotide comprising a first nucleic acid sequence, wherein the first nucleic acid sequence encodes the non-natural cis-cleaving hammerhead ribozyme of ~~any of claims 1-8~~ claim 1.

13. (Original) The polynucleotide of claim 12, further comprising a second nucleic acid sequence, wherein the second nucleic acid sequence encodes an RNA that is not a non-natural hammerhead ribozyme.

14. (Original) The polynucleotide of claim 13, wherein the first nucleic acid sequence is inserted in frame into the second nucleic acid sequence.

15. (Original) The polynucleotide of claim 13, wherein the second nucleic acid sequence comprises a non-coding region, wherein the non-coding region is selected from a 3'-untranslated region (3'-UTR), a 5'-untranslated region (5'-UTR), and an intron, and wherein the first nucleic acid sequence is inserted into the non-coding region.

16. (Original) A vector comprising the polynucleotide of claim 14.

17. (Original) A host cell comprising the polynucleotide of claim 16.

18. (Original) A vector comprising the polynucleotide of claim 15.
19. (Currently Amended) A host cell comprising ~~with~~ the polynucleotide of claim 18.
20. (Currently Amended) The non-natural hammerhead ribozyme of ~~any of claims 5-8~~ claim 5, wherein at least a portion of f and g together comprise an aptamer capable of binding a small molecule.
21. (Original) A polynucleotide comprising a first nucleic acid sequence, wherein the first nucleic acid sequence encodes the non-natural cis-cleaving hammerhead ribozyme of claim 20.
22. (Original) The polynucleotide of claim 21, further comprising a second nucleic acid sequence, wherein the second nucleic acid sequence encodes an RNA that is not a non-natural hammerhead ribozyme.
23. (Original) The polynucleotide of claim 22, wherein the first nucleic acid sequence is inserted in frame into the second nucleic acid sequence.
24. (Original) The polynucleotide of claim 22, wherein the second nucleic acid sequence comprises a non-coding region, wherein the non-coding region is

selected from a 3'-untranslated region (3'-UTR), a 5'-untranslated region (5'-UTR), and an intron, and wherein the first nucleic acid sequence is inserted into the non-coding region.

25. (Original) A vector comprising the polynucleotide of claim 23.
26. (Original) A host cell comprising with the polynucleotide of claim 25.
27. (Original) A vector comprising the polynucleotide of claim 24.
28. (Original) A host cell comprising with the polynucleotide of claim 27.
- 29-53. (Cancelled)